

Case 3126

***Bulinus wrighti* Mandahl-Barth, 1965 (Mollusca, Gastropoda):
proposed conservation of the specific name**

D.S. Brown, F. Naggs and V.R. Southgate

*Department of Zoology, The Natural History Museum, Cromwell Road,
London SW7 5BD, U.K.*

Abstract. The purpose of this application is to conserve the specific name of *Bulinus wrighti* Mandahl-Barth, 1965 for a freshwater snail (family PLANORBIDAE) from Saudi Arabia, Oman and Yemen which is an often-cited intermediate host for schistosome parasites of medical and veterinary importance. The name is a junior primary homonym of *Bulinus wrightii* Sowerby, 1853 which relates to a large West African land snail (family ACHATINIDAE). The specific name of the latter has been used for nearly 150 years but since 1855 the taxon has been placed in *Pseudachatina* Albers, 1850, and not in *Bulinus* O.F. Müller, 1781. Neither *Pseudachatina wrightii* (Sowerby, 1853) nor *Bulinus wrighti* Mandahl-Barth, 1965 has a junior synonym.

Keywords. Nomenclature; taxonomy; Gastropoda; PLANORBIDAE; ACHATINIDAE; *Pseudachatina wrightii*; *Bulinus wrighti*; schistosomiasis.

1. G.B. Sowerby sen. (1853, p. 1, pl. 1) described and figured *Bulinus wrightii*, a large dextral land snail currently placed in the family ACHATINIDAE (Stylommato-phora, ACHATINOIDEA). The description was based on a single specimen (see McMillan, 1973, p. 40 for the history of Sowerby's publication). Sowerby did not cite an authorship for *Bulinus*, nor did he give a locality for the species. Pain & Paul (1967, p. 44) noted the type specimen as lost and 'the original figure as representative of the holotype'. Sowerby's (1853) usage of *Bulinus* for this taxon has never been accepted and since 1855 it has been referred to *Pseudachatina* Albers, 1850 (see H. & A. Adams, [1855], p. 134; Pilsbry, 1904, p. 206; and Pain & Paul, 1967, p. 44 and other references cited in that paper). *Pseudachatina wrightii* (Sowerby, 1853) is a species from western Africa and Pain & Paul (1967, p. 45) cited Old Calabar, Nigeria as the type locality, as had H. & A. Adams ([1855]) and Pilsbry (1904).

2. In his description of *Bulinus wrightii*, Sowerby (1853) commented '*B. downesii* is more like this species than any other'. *Bulinus downesii* Gray in G.B. Sowerby, jun., 1841 (*Bulinus*, fig. 99), a junior synonym of *Achatina leatana* Grateloup, 1839, is the type species of *Pseudachatina* Albers, 1850. It appears that in both Sowerby jun. (1841) and Sowerby sen. (1853) the name *Bulinus* was used in error and probably as a spelling mistake for *Bulinus* Scopoli, 1777, to which genus several achatinid species were referred by authors in the 19th century. D'Ailly (1896, p. 86) listed '1840 *Bulinus Downesii* Gray in Sowerby' and then directly below cited *Bulinus Downesii*, apparently rejecting the name *Bulinus*. Pain & Paul (1967) altered to *Bulinus*, without comment, the usages of *Bulinus* by both Sowerby sen. and Sowerby jun.

3. The name *Bulinus* was established by O.F. Müller (1781, p. 6) for a group of species which included 'Le Bulin *Bulinus*' of Adanson (1757, Coquillages, p. 5, pl. 1) and to which Müller subsequently gave the name *Bulinus senegalensis*. This species is the type of the genus by Linnaean tautonymy (see Pilsbry & Bequaert, 1927, p. 133). Adanson gave the name *Bulinus* (from the French word bulle, meaning bubble) to small sinistral freshwater snails he collected in Senegal, West Africa, because they floated at the water surface. *Bulinus senegalensis* is one of about 40 species currently recognised as valid and placed in *Bulinus* Müller (see, for example, Mandahl-Barth, 1957 and Brown, 1994), classified in the subfamily BULININAE of the PLANORBIDAE (Basommatophora, PLANORBOIDEA). Some of the species are of medical or veterinary importance because they are intermediate hosts in the life cycle of *Schistosoma* Weinland, 1858 (Trematoda, Digenea), the cause of the disease schistosomiasis (bilharzia) in man and domestic livestock.

4. Mandahl-Barth (1965, p. 41) named the subspecies *wrighti* of *Bulinus reticulatus* Mandahl-Barth, 1954 (Basommatophora, PLANORBIDAE), of Africa, from specimens collected in South Yemen (formerly Western Aden Protectorate) on the basis of differences in the radular cusps previously described and figured by Wright (1963, p. 266, fig. 8). The shell from Rassais, Upper Aulaqi, figured by Wright (1963, pl. 2, fig. 6) and preserved in The Natural History Museum, London (Mollusca Registration No. 1966130), was selected by Mandahl-Barth as the holotype. This subspecies was later treated as a full species after a study of the immunological reactions of its egg proteins (see Wright, 1971, p. 311). Subsequent authors, apparently without exception, have treated *Bulinus wrighti* Mandahl-Barth as a distinct species, and the name has been used frequently in the malacological and parasitological literature (see, for example, the representative publications by Arfaa, 1976; Southgate & Knowles, 1977, pp. 82–83; Frandsen, 1979, pp. 283–285; Danish Bilharziasis Laboratory, 1983, p. 36; Hazza, Arfaa & Haggag, 1983, p. 1026; Brown & Gallagher, 1985, pp. 141–142; Brown, Gallagher, Knowles & Paltrinieri, 1985, pp. 136–137; Burch, 1985, pp. 70, 138; Jenes, 1985, pp. 88, 91; Southgate et al., 1985, pp. 1254, 1257, 1259; Mouahid & Théron, 1987, pp. 1431–33; Arfaa et al., 1989, pp. 216, 218; Al-Safadi, 1990, p. 250; Ghandour, Al-Ghamdi & Al-Robai, 1990, p. 81; Mouahid et al., pp. 349–353; Brown, 1994, pp. 246–247, 373–374; Tchuem Tchuente et al., 1997, p. 264). The species *B. wrighti* Mandahl-Barth has played an important part in experimental parasitology because it is a highly compatible intermediate host for a number of species of the *Schistosoma haematobium* group.

5. As recorded above (para. 4), the name *Bulinus wrighti* Mandahl-Barth, 1965 is well established in the malacological and parasitological literature and it is extremely undesirable that there should be any possibility of it being replaced as a junior primary homonym of *Bulinus wrightii* Sowerby, 1853. Sowerby's (1853) use of *Bulinus* for an achatinid land snail has never been accepted and there is no indication that Sowerby really intended to place his species in *Bulinus* Müller. Sowerby's species was placed in *Pseudachatina* Albers, 1850 by H. & A. Adams as long ago as 1855, and there it has since remained. The two species *Pseudachatina wrightii* (Sowerby, 1853) and *Bulinus wrighti* Mandahl-Barth, 1965 are very different taxonomically and are placed in different superfamilies and indeed orders, and their names have been used without ambiguity or confusion. Neither of the specific names has a junior synonym. We propose that *Bulinus wrighti* Mandahl-Barth, 1965 be conserved as a valid name.

6. The International Commission on Zoological Nomenclature is accordingly asked:

- (1) to use its plenary powers to rule that the specific name *wrighti* Mandahl-Barth, 1965, as published in the trinomen *Bulinus reticulatus wrighti*, is not invalid by reason of being a junior primary homonym of *Bulinus wrightii* Sowerby, 1853;
- (2) to place on the Official List of Specific Names in Zoology the following names:
 - (a) *wrightii* Sowerby, 1853, as published in the binomen *Bulinus wrightii*;
 - (b) *wrighti* Mandahl-Barth, 1965 as published in the trinomen *Bulinus reticulatus wrighti* (not invalid by the ruling in (1) above).

References

- Adams, H. & Adams, A. [1855]. *The genera of recent Mollusca arranged according to their organisation*, vol. 2. Pp. 93–284. Van Voorst, London.
- Adanson, M. 1757. *Histoire naturelle du Sénégal. Coquillages*. 190, xcvi pp., 19 pls., 275 pp. Paris.
- Ailly, A. d'. 1896. Contributions à la connaissance des mollusques terrestres et d'eau douce de Kaméroun. *Bihang till Kongl. Svenska Vetenskaps-Akademiens Handlingar*, 22(4. 2): 3–137.
- Al-Safadi, M.M. 1990. Freshwater molluscs of Yemen Arab Republic. *Hydrobiologia*, 208: 245–251.
- Arfaa, F. 1976. Studies on schistosomiasis in Saudi Arabia. *American Journal of Tropical Medicine and Hygiene*, 25(2): 295–298.
- Arfaa, F., Mahboubi, E., Al Jeffri, M., Selim, A. & Russell, G. 1989. The potential role of various species of intermediate hosts of *Schistosoma haematobium* in Saudi Arabia. *Transactions of the Royal Society of Tropical Medicine and Hygiene*, 83: 216–218.
- Brown, D.S. 1994. *Freshwater snails of Africa and their medical importance*. 608 pp. Taylor & Francis, London.
- Brown, D.S. & Gallagher, M.D. 1985. Freshwater snails of Oman, south eastern Arabia. *Hydrobiologia*, 127: 125–149.
- Brown, D.S., Gallagher, M.D., Knowles, R.J. & Paltrinieri, A.B. 1985. *Bulinus wrighti*, potential intermediate host for *Schistosoma haematobium* in northern Oman. *Transactions of the Royal Society of Tropical Medicine and Hygiene*, 79: 136–137.
- Burch, J.B. (Ed.). 1985. *Handbook on schistosomiasis and other snail-mediated diseases in Jordan*. 224 pp. Ann Arbor, Michigan, U.S.A. & Amman, Jordan.
- Danish Bilharziasis Laboratory. 1983. *A field guide to freshwater snails in countries of the WHO Eastern Mediterranean Region*. 45 pp. Danish Bilharziasis Laboratory & World Health Organisation, Copenhagen.
- Frandsen, F. 1979. Discussion of the relationships between *Schistosoma* and their intermediate hosts, assessment of the degree of host-parasite compatibility and evaluation of schistosome taxonomy. *Zeitschrift für Parasitenkunde*, 58: 275–296.
- Ghandour, A.M., Al-Ghamdi, H.S. & Al-Robai, A.A. 1990. A review of snail intermediate hosts of schistosomiasis in Saudi Arabia. *Journal of Medical and Applied Malacology*, 2: 79–91.
- Hazza, Y.A., Arfaa, F. & Haggag, M. 1983. Studies on schistosomiasis in Taiz province, Yemen Arab Republic. *American Journal of Tropical Medicine and Hygiene*, 32(5): 1023–1028.
- Jelnes, J.E. 1985. Experimental taxonomy of *Bulinus* (Gastropoda, Planorbidae) — past and future activities. *Videnskabelige Meddelelser fra Dansk Naturhistorisk Forening i Kjøbenhavn*, 146: 85–100.
- McMillan, N.F. 1973. A rare Sowerby leaflet. *Journal of Conchology*, 28(1): 40
- Mandahl-Barth, G. 1957. Intermediate hosts of *Schistosoma*. African *Biomphalaria* and *Bulinus*. 2. *Bulinus*. *Bulletin of the World Health Organisation*, 17: 1–65. (Reprinted in 1958 in WHO Monograph Series, No. 37).
- Mandahl-Barth, G. 1965. The species of the genus *Bulinus*, intermediate hosts of *Schistosoma*. *Bulletin of the World Health Organisation*, 33(1): 33–44.

- Mouahid, A., Bouhaddioui, N., Jana, M., Combes, C. & Moné, H. 1992. Effects of different mollusc associations on target molluscs growth and parasite cercarial production, in the triple system: *Bulinus wrighti*-*Schistosoma bovis* and *Melanopsis praemorsa*. *Journal of Molluscan Studies*, **58**: 349–355.
- Mouahid, A. & Théron, A. 1987. *Schistosoma bovis*: variability of cercarial production as related to the snail hosts *Bulinus truncatus*, *B. wrighti* and *Planorbarius metidjensis*. *International Journal for Parasitology*, **17**: 1431–1434.
- Müller, O.F. 1781. Geschichte der Perlen-Blasen. *Der Naturforscher, Halle*, **15**: 1–20.
- Pain, T. & Paul, C.R.C. 1967. Studies in the genus *Pseudachatina* Albers (Mollusca — Achatinidae). *Annales. Musée Royal de l'Afrique Centrale*, Tervuren, serie in octavo, Sciences Zoologiques, **159**: 1–79.
- Pilsbry, H.A. 1904. Monograph of the genus *Pseudachatina*. Pp. 205–217 in Pilsbry, H.A. & Tryon, G.W., *Manual of Conchology*, ser. 2, vol. 16 (Urocoptidae, Achatinidae). Academy of Natural Sciences of Philadelphia, Philadelphia.
- Pilsbry, H.A. & Bequaert, J. 1927. The aquatic mollusks of the Belgian Congo, with a geographical and ecological account of Congo malacology. *Bulletin of the American Museum of Natural History*, **53**: 69–602.
- Southgate, V.R. & Knowles, R.J. 1977. On the intermediate hosts of *Schistosoma haematobium* from western Kenya. *Transactions of the Royal Society of Tropical Medicine and Hygiene*, **71**: 82–83.
- Southgate, V.R., Rollinson, D., Ross, G.C., Knowles, R.J. & Vercruysse, J. 1985. On *Schistosoma curassoni*, *S. haematobium* and *S. bovis* from Senegal: development in *Mesocricetus auratus*, compatibility with species of *Bulinus* and their enzymes. *Journal of Natural History*, **19**: 1249–1267.
- Sowerby, G.B., sen. 1853. *Description of a new Bulinus*. 1853. *Bulinus wrightii*; G.B. Sowerby, Sen. 1 p., 1 pl. London.
- Sowerby, G.B., jun. 1841. *Conchological illustrations*. [iv], [116] pp., [200] pls. London.
- Tchuem Tchuenté, L.A., Southgate, V.R., Vercruysse, J., Kaukas, A., Kane, R., Mulumba, M.P., Pagès, J.R. & Jourdan, J. 1997. Epidemiological and genetic observations on human schistosomiasis in Kinshasa. *Transactions of the Royal Society of Tropical Medicine and Hygiene*, **91**: 263–269.
- Wright, C.A. 1963. The freshwater gastropod molluscs of Western Aden Protectorate. *Bulletin of the British Museum (Natural History)*, Zoology, **10**: 257–274.
- Wright, C.A. 1971. *Bulinus* on Aldabra and the subfamily Bulininae in the Indian Ocean area. *Philosophical Transactions of the Royal Society of London*, (B)260: 299–313.

Comments on this case are invited for publication (subject to editing) in the *Bulletin*; they should be sent to the Executive Secretary, I.C.Z.N., c/o The Natural History Museum, Cromwell Road, London SW7 5BD, U.K. (e-mail: iczn@nhm.ac.uk).